BC**PROGRESS**BOARD

# LEARNING TO WIN — "READY, SET, GO"

*to the*

BC Progress Board

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BC **PROGRESS** BOARD

# LEARNING TO WIN

## TABLE OF CONTENTS

**EXECUTIVE SUMMARY** ..... i

**I. INTRODUCTION** ..... 1

**II. A TIME OF CHALLENGE** ..... 2

*Demographic Trends* ..... 2
*Economic and Employment Context* ..... 4
*Research and Innovation Capacity* ..... 5
*Summary of Key Observations:* ..... 5

**III. BUILDING ON STRENGTHS** ..... 6

*Early Readiness for Schooling* ..... 6
*Our Kindergarten to Grade 12 (K-12) System* ..... 7
*Our Post-Secondary System* ..... 9
*Research Excellence and Innovation* ..... 13
*Summary of Key Observations:* ..... 14

**IV. "LEARNING TO WIN" - "READY, SET, GO"** ..... 15

**V. CONCLUSIONS AND RECOMMENDATIONS** ..... 17

*RECOMMENDATIONS* ..... 18
*"Getting Ready": Birth to Kindergarten* ..... 18
*"Getting Set": Kindergarten to Grade 10* ..... 18
*"Going Forward": Grades 11 and 12 and Post-Secondary* ..... 19
*"Going Forward": Research and Innovation* ..... 19
*APPENDIX A: EDUCATION, SKILLS, TRAINING AND TECHNOLOGY TRANSFER EXPERT PANEL MEMBERS* . 21
*APPENDIX B: BC PROGRESS BOARD MEMBERS* ..... 22

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# LEARNING TO WIN

## *EXECUTIVE SUMMARY*

The *BC Progress Board* established a Panel on *Education, Skills, Training and Technology Transfer* (ESTTT) for the purpose of assessing BC's learning systems. The Panel's work is based on two key premises. First, our prospects for prosperity, present and future, are directly linked to our society's basic, overall capacity for learning and innovation. Second, BC must build upon its current education strengths and create a culture of ongoing learning in order to secure its economic and social future.

British Columbia has been the subject of dramatic demographic, economic and social change in the last 30 years, and this pattern shows no sign of slowing in the next 30 years. Demographic shifts mean that the number of BC retirees will begin to outnumber new labour force entrants by 2009, increasing our reliance on in-migration. Competition for skilled workers will be a national and international reality, and BC will have to focus more attention on growing an educated workforce within the province.

The economy is changing rapidly. Substantially increased international competition results in continuous pressure to enhance productivity, to reduce production costs and to innovate. These factors, combined with the growth of a knowledge-based economy, mean labour market needs are continually changing. Today's jobs require higher levels of education than ever before, while generating new opportunities requires more investment in research and development to drive innovation.

BC has a solid education foundation to build on. The province's kindergarten to grade 12 (K-12) and post-secondary systems are of high quality, posting strong and consistent overall performance. But improving the system will require addressing some key challenges. At the K-12 level these are three-fold. First, steps should be taken to address performance and completion gaps that exist between Aboriginal students and the general student population. Second, the disparity in performance levels and completion rates across the province and between rural and urban districts should be addressed. And third, more emphasis should also be placed on enrolment in career, co-op and apprenticeship programs in the secondary system.

At the post-secondary level BC boasts a diversified education system, made up of a network of colleges, universities, university-colleges and specialized institutions — both public and private. However, enrolment pressures are increasing as a large high school age cohort begins to graduate. And, the changing needs of the economy are serving to increase the demand for post-secondary education of all forms. As entrance requirements are driven higher and qualified students are turned away, BC is beginning to experience shortages in a number of key professional disciplines, technical occupations, and skilled trades. This situation demands special attention in all regions, but especially where population growth pressures are predicted to be the heaviest (Lower Mainland/Fraser Valley and the Okanagan).

Succeeding in today's knowledge-based economy also requires a firm provincial commitment to research and development and innovation. While the Federal government is making increased resources available for such initiatives, BC is lagging behind other provinces in accessing and leveraging such funds. And, BC industry-level investment in research and development is below the national average. While this can be attributed — at least in part — to an under-performing provincial economy in recent years, public policy has also played a role in deterring industrial research and development in some sectors.

The Panel has devised a "Learning to Win" strategy that requires a fundamental commitment from all stakeholders (individuals, communities, businesses and governments) that extends across the learning spectrum from early childhood development to life-long learning. This approach includes removing barriers to individual access to learning across the province through an integrated three stage learning process. First, this involves "Getting Ready" by ensuring that parents of pre-school children are provided information on the importance of early childhood development. Second, "Getting Set" underscores the need to increase secondary school per-

formance levels, graduation rates, and "multiple pathways" towards secondary and post-secondary graduation. The third and final stage of this process is "Go", and involves enhanced support for research and innovation, along with a system-wide commitment to life-long learning. The report includes ten strategic recommendations:

1. Require health and education agencies to make available to all new and prospective parents, the facts linking secure, nurturing, and stimulating home/family environments to strong brain development, high capacity for learning, and low incidence of behaviour disorder and incorporate within the educational curriculums for all high school students programs on parenting and early childhood development.

2. Develop a core emphasis on student performance assessment in kindergarten through grade 10, with a focus on expanded and refined knowledge of student assessment criteria and methodology; set targets for performance on international achievement tests (reading, math and science) approaching a score of 550.

3. Engage with Aboriginal communities in a culture of learning that encourages students to succeed in their educational goals and monitor year over year improvements in student performance on Foundation Skills Assessments and in relation to graduation rates.

4. Broaden and extend pathways to graduation and target an increase in the overall secondary program graduation rate at a minimum of 85% by 2010, and increase the rate of secondary program graduation for Aboriginal students to 60% or better by 2010.

5. Within the increase of the overall secondary program graduation rate, target increases in the number of students completing programs in apprenticeship, career/technical, and cooperative education by a minimum of 50% by 2010.

6. Expand the capacity of the post-secondary system to respond to a growing student population and demand:
    - Extend the mandate of an existing provincial University to Kelowna;
    - The numbers of international students educated within our post-secondary system should be increased by 50% by 2010;
    - Consideration should be given to the potential benefits of rationalizing college administration, beginning with the Greater Vancouver area; and,
    - Increase the overall profile and capacity of skilled trades and technical training by reallocating existing research and capital infrastructure of BCIT to Kelowna and Prince George.

7. Sponsor a Learning Summit every two years focusing on the development of partnerships between industry, communities, and educational institutions to foster workforce education and lifelong learning experiences for all British Columbians.

8. Replenish the BC Knowledge Development Fund sufficiently to ensure that BC attracts a minimum 15-20 % share of all federal research funding for British Columbia.

9. Increase the number of students completing graduate research degrees within our university system by 7.5% annually.

10. Set appropriate targets for technology transfer and the commercialization of technologies arising from university research, including the number of patents, licenses and spin-off companies that should be developed.

# LEARNING TO WIN

## I. INTRODUCTION

In July 2001, Premier Gordon Campbell formed the BC Progress Board, an independent panel of fifteen senior business and academic leaders. The Board is mandated to benchmark BC's performance over time and relative to other jurisdictions, and to provide the Premier with strategic advice on ways to improve the performance of BC's economy and its social policy supports.

The Board issued its 2001 Report in February 2002 and will report again to the Premier this December. In line with its mandate and as part of its 2002 work plan, the Board established a Panel on Education, Skills, Training, and Technology Transfer (members are listed in Appendix A). Its purpose was to examine the current performance of BC's learning systems, provide an assessment of future requirements of these systems, and to make recommendations, where required, all relevant to the goal of improving the performance of our provincial economy and the quality of our social experience.

The Panel's work began with the recognition that our people and our educational institutions are crucial to our quest to improve economic and social performance. Education fulfills many roles in society, ranging from the prosaic to the practical. It provides people with the skills and knowledge necessary for them to realize their potential as both individuals and members of society. It opens the pathways to exploration and discovery of ourselves, our community, our past, our present and our future. It builds the bridges between members of communities, both local and global, by giving us the tools for communication and expression.

Education also ensures that we have the skills and knowledge necessary for markets of the future, which will differ from those of the past and the present. Compelling data demonstrate that investment in education is the best predictor of economic growth. Countries whose economies thrive are those who invest significantly in education. Indeed, many of the key economic indicators identified in the 2001 Report of the Progress Board - including levels of real GDP per capita, real personal disposable income per capita, employment growth and factor productivity (to name a few) - have been shown to be inextricably linked to levels of educational investment.

The data tell the story – the province's investments in education, training, and upgrading of specialized skills hold the highest pay-off of any investment that government, business, and individuals may make in improving the economic environment for business activity and employment growth.* The overall challenge in taking advantage of this recognized fact for British Columbia is

* There is a large body of empirical evidence linking education investments to the overall economic performance of a jurisdiction. See for example: Robert J. Barro, *Determinants of Economic Growth: A Cross-Country Empirical Study*, MIT Press, Cambridge, Ma., 1997.; R. Murane, J. Willett and F. Levy, *Review of Economics and Statistics*, 1995, pp. 251-66.; James Brander, *Comparative Economic Growth: Evidence and Interpretation*, Vol. 25, No. 4 (Nov., 1992), pp. 792-818.; Ather H. Akarbi, *"Provincial Income Disparities in Canada: Does the Quality of Education Matter*, in "National and Regional Economic Development in Canada", a special supplement in: The Canadian Journal of Economics, Vol. 29, April 1996, pp. s337-s339; Jimmy M. Sanders, *"Short- and Long-Term Macroeconomic Returns to Higher Education"*, Sociology of Education, Vol. 65, No. 1 (Jan, 1992), pp 21-36.

twofold: 1) building upon our current education successes; and, 2) creating a provincial culture of ongoing learning.

For many years, British Columbians have been well served by high quality educational institutions. Our task now is to build upon those strengths. As important, however, is extending our commitment to learning beyond the classroom – instilling the importance of continuous learning, throughout the entire province, for all British Columbians, in every facet of life. By focusing on both aspects of learning – in and out of the classroom – we will build our innovative capacity as a province, thereby ensuring that British Columbia "learns to win" in the 21st century.

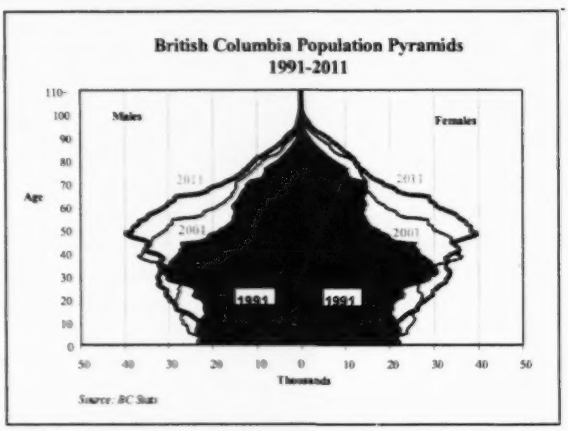
This report explains this twofold approach, and the respective emphases and actions associated with it, by first outlining our current demographic, economic, employment and research context, then describing current strengths, and, finally, proposing key emphases for an improved learning system for the province as a whole. The report concludes with recommended actions related to each of the key emphases.

## II. A Time of Challenge

British Columbia has experienced extraordinary change in its population over the past 30 years and it is clear that the change in the next 30 years will be equally, if not more, dramatic. While it is not possible to know precisely what this change will bring, one thing is clear: developing the talents and innovative capacity of our population and retaining these qualified people will be the single most important aspect of any effective strategy to ensure British Columbia's economic and social well-being.

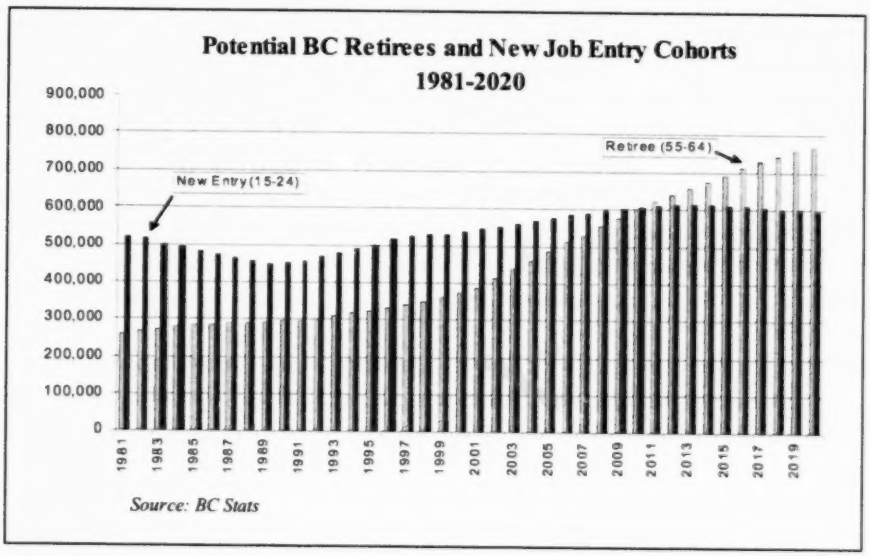
### *Demographic Trends*

Over the next ten years, an aging population will drive changes in the need for education, skills, and training. The following chart illustrates expected areas of population growth and contraction by age.

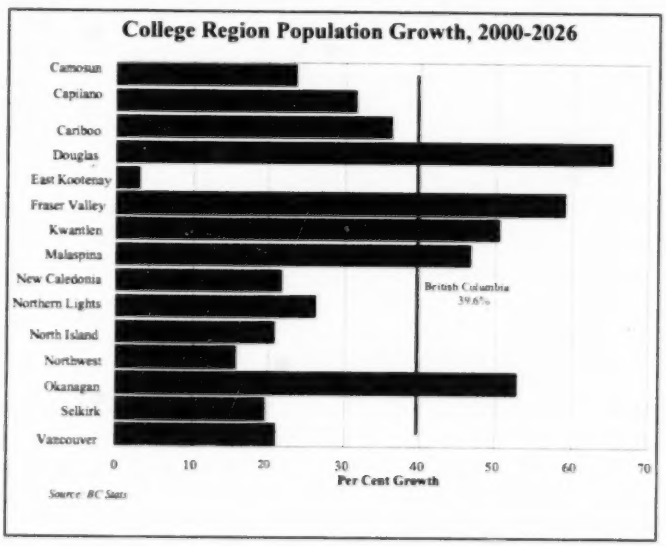



BC – like many other jurisdictions – has an aging population where new entrants into the workforce (15-24 year olds) will be outnumbered by those entering retirement by 2009. Two factors account for this shift – the first is the bulge in one age profile, with 42% of the population aged 35 - 64, while the second is the decline in the number of young people as a result of relatively low birth rates over the past thirty years. In the future, our aging population will rapidly increase the demand for social services (particularly health care and income support) at the same time as the workforce slows in growth: the number of 0 to 19 year olds today, who will enter the labour force in the next two

decades, is 15% smaller than today's number of 40 to 59 year olds, who will retire by 2021. As a result, a much higher level of skill and knowledge will be required to ensure that BC produces the wealth necessary to pay for the levels of community services required by an aging population. The Chart below shows that this trend is projected to continue, and will magnify towards 2019.




British Columbia is not alone in confronting the challenges of an aging workforce, shortages in many occupations and regional differences in the distribution of population growth. All other provinces and most industrialized countries are faced with similar challenges. A few implications arise from this. First, BC will have to increase the skills and knowledge of its labour force to generate levels of economic growth necessary to pay for social programs required by an aging population. Second, BC must focus more attention on attracting well-educated immigrants and foreign students to help address looming occupational shortages. Inter-provincial and international competition for skilled immigrants and students will be strong, meaning that BC must focus considerable effort on building capacity and devising winning strategies to attract and retain top-caliber people. Finally, policy makers will have to be acutely sensitive to new equity and "quality of access" challenges presented by uneven population growth in urban and regional British Columbia.



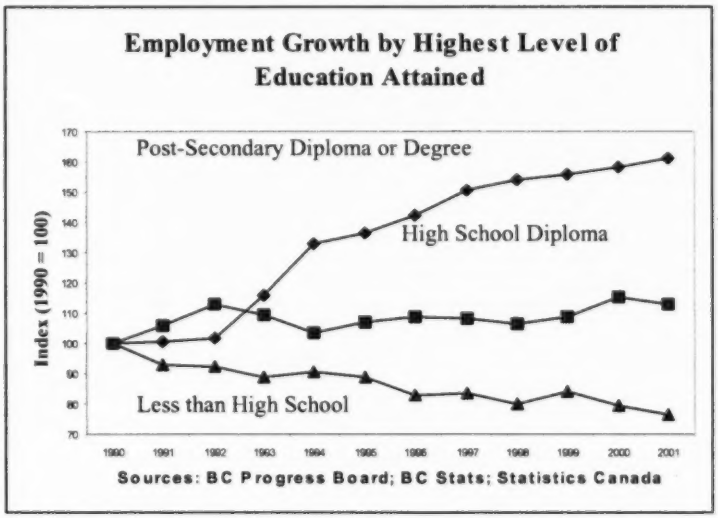

The group of youth aged 18-24 is projected to increase by approximately 9% through the year 2015.

This has significant implications for our post-secondary institutions. An examination of projected regional college area populations provides a useful demographic framework for showing where this growth is likely to occur during the next ten years. Portions of Greater Vancouver, the Fraser Valley, Vancouver Island and the Okanagan can expect population growth well above the provincial average.

***Economic and Employment Context***

Education, skills, and training yield major paybacks in terms of job quality, wealth creation, social inclusion, cultural dynamism, intellectual creativity and well-being. In particular, the generation and transmission of new knowledge expands the innovative capacities of our economic, social, and cultural institutions. Better educated, better skilled people and the commercialization of good ideas create new market prospects, improve our ability to adapt and change, and propel regional and provincial enterprise and employment growth.

A number of economic factors – portability of new technologies, declining transportation costs, reduced trade barriers, and more integrated financial and capital markets – have led to globalization of production and distribution. With globalization has come substantially increased competitive pressure on developed economies, especially their goods-producing sectors, though similar pressures are increasingly felt in the service economy. As well, technology has been reducing, at an accelerating rate, the quantity of labour required in many sectors, while generally increasing the levels of skill required across the board. The net result is unprecedented restructuring in developed economies as higher wage, moderately skilled production jobs are transferred to other countries where wage and benefit costs are substantially lower. In this environment, the ability of education, skills, and training systems to adapt to changing economic and labour market needs has become an important source of competitive advantage and a critical springboard for new wealth creation.



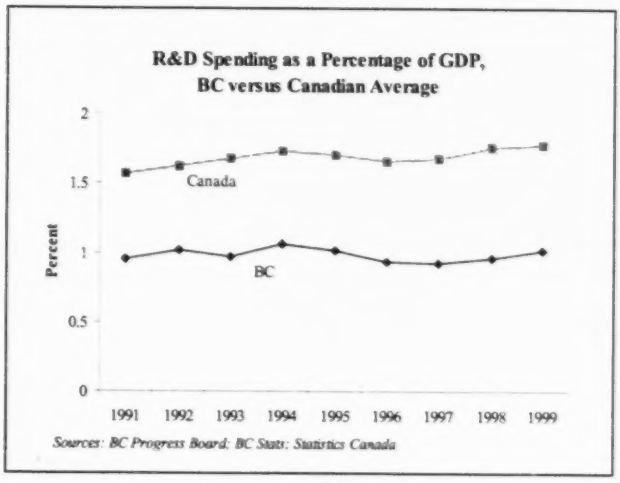

According to some estimates, over 700,000 job openings are expected in the BC workforce over the 1998 to 2008 period; of these openings, fully 380,000 are expected to be a direct result of the baby-boom generation entering retirement. Sixty per cent of these opportunities will be in the "Technical, Paraprofessional and Skilled" and "Intermediate" occupational categories of the labour market, thereby requiring some level of post-secondary education. The days of being able to get by with a high school diploma, or less, are essentially over.

A number of implications stem from looming skills shortages. British Columbia must not be complacent in the belief that shortfalls can be filled with workers from international or other domestic labour markets. Indeed, over the past five years, the inter-provincial flow of people out of BC has exceeded the flow of people into BC. Policy makers will need to pursue a "twin track" approach that emphasizes establishing additional capacity within our provincial learning systems in addition to attracting highly skilled and qualified workers from other jurisdictions. Establishing additional capacity within the province has the added benefit of creating opportunity for BC students who currently must go to other provinces to meet their educational objectives or often do not participate in post-secondary education. And we also need to give greater priority to attracting highly capable students to British Columbia with the expectation that many will remain here to help British Columbia's future.

***Research and Innovation Capacity***

Innovation or the ability to create new technologies, products, and services is well recognized as being key to the development of a vibrant and sustainable economy. Investment in research and development is now largely acknowledged as one of the major indicators of a region's innovative capacity. In recognition of this, Canada has recently initiated an "innovation agenda" and set an ambitious target: to move from our current place of 14th amongst OECD countries when measured on the basis of research and development investment as a percentage of GDP to 5th place by 2010.

Canada's recent commitment to innovation has seen a significant increase in federal investment in research and development over the past several years. British Columbia, on the other hand, is falling behind in its research investment. In 1999, 1.01% of BC's GDP was spent on research and development, the fifth lowest in Canada – placing us well below the Canadian average of 1.77%.




***Summary of Key Observations:***

British Columbia must be prepared to take the steps necessary to respond effectively to the demographic, economic, employment and research challenges that lie ahead. In short, these challenges include:

- Demographic pressures will result in: 1) insufficient new entrants to the workforce to replace those who will leave through retirement; and, 2) an increase in the demand for post-secondary education by the growth in the 18-24 year old population;

- A labour force increasingly dependent, directly and indirectly, on immigration for growth;

- Significant skill shortages in a number of critical occupation groups such as aircraft mechanics, computer programmers, electrical and computer engineers, nurses, physicians, pharmacists, plumbers, electricians, carpenters, educators, and many others. These shortages are accentuated by the net loss of skilled workers, i.e. more workers are leaving the province than are moving here;

- A high proportion of new job openings requiring some form of post-secondary education, thereby threatening workforce involvement for significant numbers of British Columbians who do not have the appropriate post-secondary educational qualifications. This particular trend has the potential for widening the labour force participation gap between urban and rural British Columbia; and,

- Levels of research and development investment well below levels appropriate to knowledge-based economies. Canada is a disturbing 14th amongst OECD countries, and BC consistently lags behind the Canadian average for research and development investment.

The current context and issues argue strongly in favour of systematically building a "learning to win" culture in British Columbia. Such a culture would address four critical aspects of education: early readiness for schooling; solid foundations in fundamental knowledge and skills; diverse, specialized pathways to a responsive and accessible post-secondary system; and, an ongoing commitment to learning, research and innovation.

## III. Building on Strengths

In British Columbia we know our learning and innovation systems will be of vital importance to the long-term performance of our economy and to the health of our society. On this front, we are well positioned to build upon our current strengths. Following are brief overviews of the 'facts of life' in the four aspects of education that have been identified as being critical to building a learning to win culture: early readiness for schooling; solid foundations in fundamental knowledge and skills; diverse, specialized pathways to a responsive and accessible post-secondary system; and, an ongoing commitment to learning, research and innovation.

### *Early Readiness for Schooling*

The significance of early influences on a child's capacity for learning has always been sensed, intuitively, by parents and communities; such influences include stable, nurturing family and community environments, early stimulation, and encouragement in the trial-and-error of learning. More recently, the importance of these factors and the direct role they play in the actual brain development of a child (i.e. their neurological and emotional capacity for learning) have been confirmed in the conclusive research findings of Dr. Clyde Hertzman, and others at the University of British Columbia. Taken together, these findings indicate the major determinants of healthy

child development to be: family income, education, and parenting style; neighbourhood safety and cohesion; and, access to "quality" care arrangements.

Regrettably, many children are disadvantaged long before they enter the formal education system. Addressing the relevant issues and raising the level of readiness of all young British Columbians to get the greatest possible value from their educational experience, will require complex solutions. However, we now know how important it is for new parents to have the information they need about what they can do to foster effective learning environments for their children. Health and education providers are increasingly recognizing the important role they too can play in making sure information is made available to new or prospective parents on creating the right conditions for children to be healthy and well prepared for learning.

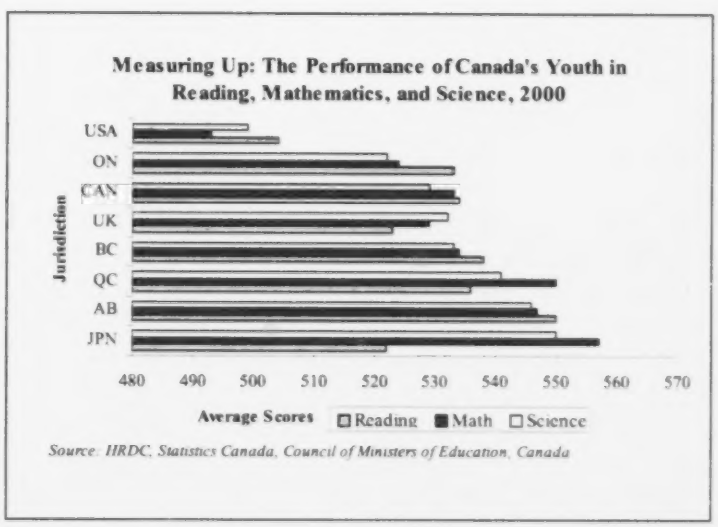
The Panel is of the view that action should be taken to modify the K-12 curriculum to increase the extent to which students receive education relevant to parenting and, more particularly, on the linkages between early childhood development and learning.

***Our Kindergarten to Grade 12 (K-12) System***

British Columbia's K-12 education system currently serves approximately 632,000 students in public schools, a further 60,000 in independent schools and an additional 3,700 students through supports available to home-schooled students.

At a general level, the K-12 system has demonstrated strong and consistent performance in a number of key areas. The overall high school completion rate has increased to 75.9% in 2000/01, up from 74.8% in 1999/00 and up dramatically since 1992/93 when the completion rate was at 67.0%. In setting targets for improved performance, BC should strive to achieve a school completion rate of 85% by 2010. For reasons outlined below, the Panel believes this objective will require progress on a number of fronts including initiatives currently being considered by the Ministry of Education to broaden the pathways to graduation.

The performance of students within the system has also been generally impressive. This is perhaps best demonstrated by the student achievement results reported through the year 2000 Program for International Student Assessment which measured international performance in the core disciplines of reading, mathematics and science. British Columbia was among the top group of countries and provinces in reading performance. The figure examines



BC's performance relative to other competing Canadian provinces and a selection of international jurisdictions. In all three subjects, BC outperforms the Canadian average, but lags behind neighbouring Alberta. In general, BC fares better than the US and the UK, but places behind Japan. This progress is encouraging, but continuous improvement will be essential if BC is to be properly positioned to successfully compete. Our objective ought to be to achieve levels of performance approaching 550 in reading, math and science (i.e. at least consistent with those of Alberta). Despite this performance, the Panel is concerned about the outcome of the most recent Foundation Skills Assessment. While the grade four results were encouraging, there was also a significant drop in some areas of performance at the grade ten level. The Panel believes progress on the Foundation Skills Assessments should be closely monitored by schools, school districts, and the Ministry of Education on an annual basis. We further believe that participation by students should be maximized to the greatest extent possible to increase the likelihood of consistent reporting.

> ***"Opportunities for Aboriginal learners remain one of the most important and long-standing issues in education in British Columbia. It is clear...that a large number of these learners do not experience success as measured by graduation rates, achievement scores, transition rates, and attendance rates. Also clear is the need for the system to be responsive to the needs of these learners within the context of their cultural heritage and in cooperation and partnership with their parents and communities."***
>
> *"A Future For Learners: A Vision For Renewal of Education in BC."*
> *Select Standing Committee on Education- The Legislative Assembly of British Columbia*

The Panel recognizes the many strengths and the overall level of performance by students within the K-12 system. We also support initiatives to concentrate resources on student achievement. However, we believe there are three specific areas of concern which require careful and serious attention.

The first – and most significant – concern is the demonstrably clear performance and completion gap between Aboriginal students and the general K-12 student population. The Aboriginal population in British Columbia is relatively young, with fully 50 percent under the age of 25. Aboriginal people represent a growing proportion of citizens potentially entering post-secondary education and the workforce. Many factors contribute to the performance of Aboriginal students and their sharp declines in participation from grade eight and beyond. Schools and communities are not yet achieving an acceptable level of success in effectively meeting the needs of Aboriginal students.

While progress will be important in respect of the performance and completion success of status Aboriginal students living in on-reserve communities, it will be equally necessary to see improvements for students living off-reserve and in communities like Vancouver, which has one of the larger concentrations of Aboriginal citizens in the country.

The Panel's second concern is the apparent disparity in student performance and completion success across different regions of the province. The available evidence clearly demonstrates that there is significant variation in achievement from one school district to the next and distinct differences between urban and more remote schools. Given that education is critical to the capacity of citizens to respond effectively to a rapidly evolving economic environment, appropriate targets

for improved performance should be set to achieve equity between urban, regional and rural districts by 2010.

The third specific area of concern deals with the need to elevate the importance of – and participation in – skilled trades, apprenticeship and career programs within our secondary schools. Significant progress has been made in these areas but the pace must be accelerated if the province is to avoid the impact of skill shortages outlined earlier in this report.

Currently, there are three types of career programs available at the secondary school level: career preparation (43,061 students enrolled in 2001/02), co-op education (2,288 students) and secondary school apprenticeship (which saw a 474 percent increase from 181 students in 1996/97 to 1,039 students in 2001/02). All of these programs combine related career courses, foundation courses from the core curricula and varying degrees of direct workplace experience. The Panel takes the position that it is important to increase the percentage of students enrolled in – and successfully completing – career programs. We are, however, very concerned about anecdotal information which suggests that revisions to funding arrangements may have had the unintended consequence of actually reducing the number of career programs available to secondary students. Accordingly, we recommend that these programs be monitored on a year-to-year basis with 2001/02 as the benchmark baseline year to determine whether progress has been made, or if ground has been lost. If necessary, corrective action should be undertaken with the objective of achieving a further 50 percent increase in the number of students enrolled in career programs by 2010. The Panel also urges policy makers to consider whether modifications can be made to teacher training and certification programs to increase effective recruitment and retention of professionals with expertise in skilled and technical trades. We also believe government should modify the Passport to Education Program to permit students who specialize in skilled trades to enjoy benefits similar to students pursuing academic studies.

The Panel further notes the importance of parental involvement in instructional programs is well known but rarely achieved at the secondary school level. Partnership arrangements now being developed in many schools that show promise should be encouraged and – where successful – extended. Businesses, community organizations and other social service agencies can also be useful partners. The Panel encourages the development of partnerships with post-secondary institutions to increase the level of advanced placement and/or dual credit opportunities for secondary students who wish to accelerate their progress towards the completion of post-secondary credentials in skilled trades or in academic programs.

***Our Post-Secondary System***

British Columbia benefits from a highly differentiated system of 27 colleges, university-colleges, universities and specialized institutions, which offer a broad range of programs from adult education to research-intensive graduate studies at the university level. The province also has a large number of private post-secondary providers offering training in areas like aviation, business, computer training, ESL, tourism/hospitality and culinary trades. British Columbia has also recently enacted legislation to facilitate the establishment of additional private degree-granting institutions beyond the modest number that currently exist. The Panel strongly supports the value

of the diversity and differentiation offered by British Columbia's public and private post-secondary institutions.

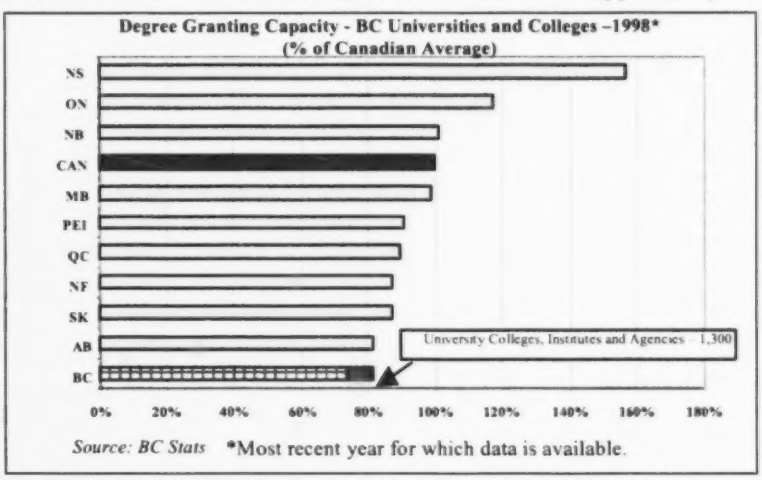
On the public side, BC's post-secondary system demonstrates many of the same strengths described earlier in relation to the province's K-12 system. The universities are consistently ranked at, or near, the top of national surveys and the colleges and university-colleges have strong reputations. British Columbia also has the benefit of one of the most effective credit transfer systems in North America and this provides the foundation necessary to support significant student mobility between institutions.

However, as with the K-12 system, the Panel believes action will be necessary to sustain and improve the capacity for excellence we must continue to expect from our post-secondary institutions. Here, as well, we have three key concerns: British Columbia is not currently positioned to produce an adequate supply of graduates with university degrees; our colleges and institute sector must be able to respond more effectively to labour force needs in skilled and technical trades; and, we are not doing enough to meet the needs of Aboriginal students or to attract international students to British Columbia.

Maintaining the strengths of the post-secondary system over the next several years is essential but it will also be a challenge. Enrolment pressures on the post-secondary side will increase as a result of two key factors. First, the increased number of K-12 students who occupied portable classrooms throughout the province for much of the past decade is now moving through the latter stages of the K-12 system and into the post-secondary phase. Second, the heightened importance of post-secondary training is also placing additional pressure on enrolment demand.

At present, qualified students are being turned away and entrance requirements – driven higher by the harsh realities of insufficient supply – have been increasing beyond levels that are considered reasonable. We simply don't have enough capacity to meet the needs of qualified students who wish to learn – and it is in our interest – to make certain we don't lose the opportunity to have those citizens trained and developed to the full extent possible.

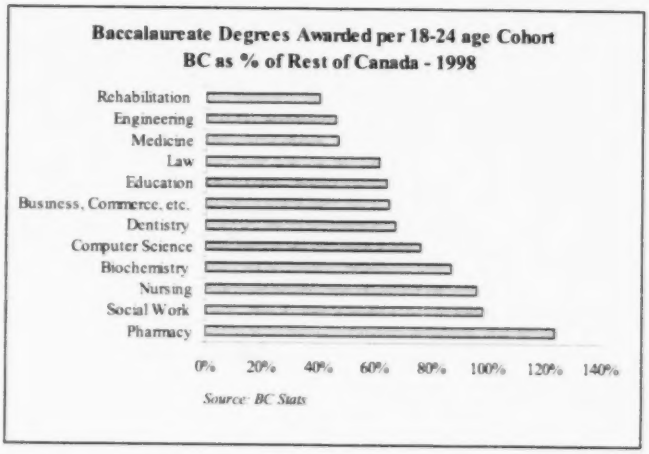
The opposite figure, based upon the most recent data available from universities and university-colleges, illustrates British Columbia's position with respect to degree-granting capacity. Despite the establishment of two new universities and the development of five university colleges and two degree




*Source: BC Stats* *Most recent year for which data is available.

granting institutes, BC is still second last among Canadian provinces in undergraduate degree granting capacity.

Capacity levels are even lower in a number of key professional disciplines and the province has experienced some of the adverse implications, which result from a shortage of supply in some of those groups. This demonstrates the importance of recent moves by government to increase the number of graduates in medicine, computing sciences and engineering.




Responding effectively to increased enrollment demands will also require a regional strategy as the pattern of population growth will not be the same throughout the province. The most significant increases will occur in the Lower Mainland/Fraser Valley area and in the Okanagan region. To the fullest extent possible, existing institutions should be utilized to meet increased demands. In the Okanagan, however, it may be time to consider whether full university capacity will be required to meet both student demand and research driven economic development potential. This could be achieved either through an expansion of the mandate of the Okanagan University-College or through a University of California style arrangement between one of the existing major universities and the existing institution at Kelowna.

The Panel also believes it would be in the public interest for government to review the current governance structure for colleges in the Greater Vancouver region. Rationalizing existing administrative structures could reduce overlap and duplication and permit the allocation of resources in a manner that would facilitate increased opportunities for the development of Centres of Excellence.

Specific attention must also be given to the success of Aboriginal students. Examples of successful post-secondary educational programs include the Native Indian Teacher Education Program (NITEP) at UBC that has graduated significantly increased numbers of native teachers over the past decade. Efforts need to be increased to develop appropriate pathways for Aboriginal students in a variety of areas, such as the health professions and engineering. Successful strategies will depend, in part, upon the effectiveness of related initiatives at the K-12 level.

***"BC's economy and labour market are at a skills crossroads: either drastic changes need to be implemented in the training, recruiting and retention of skilled workers, or we will face the consequences. It is time that BC business takes on this challenge in partnership with governments, workers and educators. The solutions will require bottom-up approaches in local communities and specific industry sectors."***

*"Closing the Skills Gap". A Report of the BC Chamber of Commerce Skills Shortages Initiative, April 2002.*

As we confront the challenge of a shrinking workforce, the recruitment of international students to the province becomes a strategic means to build an educated workforce. Many countries including Australia, United Kingdom and the United States are addressing skilled labour shortages through strategic recruitment of international post-secondary students. British Columbia now ranks third (behind Quebec and Ontario) in terms of the number of international students it attracts. In 1999-00, BC hosted 13,435 international students in its public colleges, institutes and universities. We need to build upon this record and set targets to increase our international student recruitment with the goal of increasing the numbers by 50% by 2010. The province should encourage the federal government to make necessary changes to immigration law to enhance the prospect of retaining well qualified students once they have graduated.

Training and education in skilled trades and technical professions is an area that also warrants particular attention. Clear labour shortages are developing – or already exist – in these areas and both the Business Council of BC and the BC Chamber of Commerce have identified their respective concerns about the absence of an overall coherent plan to address critical skill shortages in a number of fields. Action on this front is necessary and it will also be important for government to demonstrate leadership in revitalizing, reforming or replacing British Columbia's apprenticeship system.

We also think it's important to make reference to the growing significance of developing effective distance learning opportunities. British Columbia has a number of institutions – both public and private – that have been actively involved in using e-learning solutions to respond to the needs of learners. Institutions should be encouraged to develop further high-quality distance learning options and, if appropriate, to use consortia–based approaches to service delivery.

As mentioned earlier, increasing the number of opportunities for K-12 students to make seamless transitions to post-secondary training will also become increasingly important. This should be particularly encouraged in skilled and technical trades and it may require flexibility in making resources from the K-12 funding envelope available to the college and institute sector to help facilitate such growth. The province may also wish to consider raising the profile of training for skilled trades by expanding the provincial reach of institutions like BCIT.

***"BC's growing tourism industry is facing a shortage of 40,000 skilled employees by 2010. Sponsored jointly by government, industry associations and unions, People Development for the Tourism Industry is a targeted five-year strategy aimed at retaining valuable employees. The province-wide industry-led task force of 28 CEO's, general managers, HR directors, industry association executives and tourism educators will table their 5 year coordinated plan for tourism workforce, education, skills and training by the end of 2002. The initiative may hold promise as a model for other industry sectors grappling with looming skills shortages."***

*A Collaborative Effort Towards Workforce Education, Training and Skills Development For BC's Growing Tourism Industry.*

British Columbia has the benefit of strong institutional support for the needs of mid-career learners. This has been an important part of the mandate of BC's college system for many years and it has increasingly become an important aspect of the role of university-colleges and universities as well. In addition, the private sector and industry have important roles to play in fostering learning organizations. For example, an interesting program of workforce education is being developed by the tourism sector

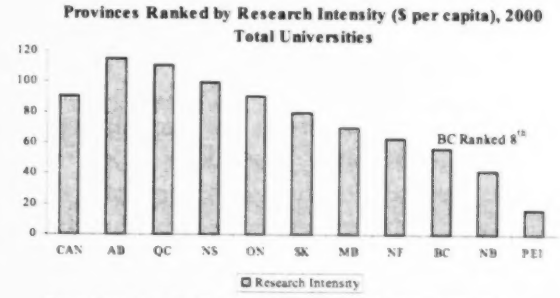
(see box on preceeding page). Progress on this front, along with increased collaborations with the private sector and further increases in the effective use of distance learning technologies and prior learning assessment, will be required in order to establish a sustainable "learning to win" culture.

***Research Excellence and Innovation***

British Columbia's potential for success will also require a renewed and significant commitment to research and development and the establishment of the conditions of excellence necessary to support innovation in our economy and in our society.

In recent years the Government of Canada has significantly increased research support at Canadian universities through a number of programs including the Canada Research Chairs initiative, the Canada Foundation for Innovation, the Canada Institute for Health Research and Genome Canada. These initiatives were set in motion at a time when it was becoming clear that Canada's research competitiveness had declined and was at risk of losing further ground. While Canada now ranks 14th amongst OECD countries when measured on the basis of research and development investment as a percentage of GDP, Canada has established an ambitious target of achieving a 5th place ranking by 2010.

In response to initiatives established by the federal government, other Canadian provinces have been quick to take steps to attract disproportionate shares of federal funding to their respective jurisdictions. As a result, the already strong research infrastructures in Ontario and Quebec have been further strengthened. And Alberta has made the strategic investments necessary to dramatically improve their competitive position.




*Source: Population Stats Can Census 2000, Funding SSHRC, NSERC, CIHR, 2000*

British Columbia's situation has been less positive. The province has not moved with sufficient speed to fully exploit the potential for attracting increased federal research and development spending to BC. This has resulted in BC leaving money on the table to be claimed by competing jurisdictions. Currently, BC ranks 8th in terms of attracting federal research funding per capita.

***"Further initiatives to upgrade provincial support for post-secondary research including indirect research costs, will be required if BC is to attract a fair share of the rapidly growing sums of money being dedicated to post-secondary and health care research by the federal government. At a time of fiscal restraint and government budget cuts, that is admittedly a tall order. But it is important that policy-makers not lose sight of the long-term economic benefits that flow from the presence of high quality universities able to pursue cutting-edge top-ranked faculty."***

*University Research and the Innovation Economy, Business Council of BC, December 2001.*

While universities are not the only place where research and development activity is undertaken, it is clear that university-based research has increas-

ingly become a "major driving force in producing and translating new scientific discoveries into fresh economic and social opportunities." It is also clear from the innovation strategy of the Government of Canada, that the federal government intends to increase the levels of funding support available to Canadian universities. British Columbia must be much more aggressive than it has been in past to ensure appropriate levels of those investments are brought to British Columbia. The Panel takes the position that capturing at least 15-20% of all available federal funding should be targeted as the right objective and that the BC Knowledge Development Fund should be strengthened to support the achievement of this goal. The difference to the province between attracting even 15% versus the current 9% is significant, with estimates of that difference approaching $140 million a year by 2007/08.

British Columbia's universities also have a strong record for the commercialization of research as evidenced by licenses and patents issued and through the establishment of successful spin-off companies. This trend must be maintained and specific objectives should be set with regard to this activity. For example, using widely accepted North American norms, 15% of the federal funding in 2007/08 (i.e. $320M) should generate 160 disclosures, 80 patents, and 40 licenses with 50% leading to spin-off companies.

An analysis of industrial R&D investment reveals that British Columbia lags significantly behind Quebec and Ontario. In 1999, private businesses contributed 0.45% of the provincial GDP to research investments in British Columbia, compared with 1.3% in Quebec and 0.9% in Ontario. The explanation for this phenomenon is complex but includes the industrial base in BC, the lack of an industrial R&D culture, and the absence of harmonized public policy that encourages research investments. An example of this is found in the pharmaceutical industry where major Canadian pharmaceutical companies are deterred from making research investments in British Columbia due to a health policy that adversely affects the sale of their drugs in BC. Other provinces, such as Quebec, Ontario and Alberta have harmonized their health and industrial policies to encourage major pharmaceutical research investment.

Success will also require the strengthening of graduate level programs, particularly at the PhD level. The development of high quality personnel (HQP) is essential to any innovation strategy. In 2000/01 BC universities produced 2,974 graduate degrees, with the large proportion of these degrees being at the master's level. Significant increases in graduate student production are required to provide the HQP necessary to develop an innovative economy. British Columbia is not alone in the need to develop more HQP. As noted in the federal government's innovation agenda, the need to increase our graduate student capacity is a nation wide goal. It is recommended that BC adopt the target of increasing our graduate student production by 7.5% annually.

***Summary of Key Observations:***

In British Columbia we have developed strong educational and learning systems that will be essential to our future economic prosperity and social development.

- Strong research evidence identifies the first six years of life as being critical to the development of a child's capacity to learn, but some children are being unduly disadvantaged before entering school as a result of impoverished early learning environments;

- Our Kindergarten to Grade 12 (K-12) public education system is of high quality, but regional disparities exist with regard to performance outcomes, with particular concerns associated with the success of Aboriginal learners;

- Intermediate and secondary students perform well on national and international assessments, but performance levels need to be enhanced, graduation rates must be improved, and linkages with post-secondary opportunities strengthened;

- Skilled trades and technical training programs exist but there is a need to increase the profile of, and enrollments in, such training both in our K-12 system and within our college and institute system;

- The post-secondary system is excellent and diverse, but capacity has not been developed to meet the growing demands for access and the opportunities to attract international students must be expanded;

- Federal research funding is increasing at unparalleled rates, but British Columbia is not obtaining an appropriate share of this funding;

- Public policies need to be reviewed and aligned in order to encourage industrial investment in R&D; and,

- The graduates of our post-secondary education system are extremely capable, but we are not educating enough high quality personnel (HQP) to support an innovative society.

## IV. "Learning to Win" - "Ready, Set, Go"

As we pursue a more prosperous British Columbia, we know that learning and innovation are fundamental to the revitalization of our traditional industries and to the development of the skills and knowledge necessary to support the creation of the new knowledge-intensive activities that will help drive economic growth. If we are to succeed, progress will be necessary on many fronts, but the foundation upon which all else must be constructed is a strong, effective commitment to "learning to win".

A fundamental and essential commitment to "learning to win" must be shared by individuals, communities, businesses, and governments. The commitment must extend across the

> ***"There must be greater readiness for learning instilled in our pre-school citizens, reinforced emphasis on the acquisition of basic knowledge and skills by our kindergarten to grade 10 students, more diversified pathways to graduation for our grade 11 and 12 students, more seamless integration and transitions between the K-12 and post-secondary systems, enhanced opportunities for lifelong learning, and more support for research and innovation."***
>
> *Progress Board Education, Skills, Training and Technology Transfer Panel.*

spectrum from early childhood development to lifelong inquiry, incorporating the finest of professional practices, supportive resources, and empirical research.

Though we have separated the treatment of our K-12 system and our post-secondary systems for sake of providing background information on each in this paper, we are recommending a broader overall perspective on formal education as part of a larger learning system. We believe that policy makers, business people, and individuals must recognize and remove any barriers standing in the way of individual access to learning in our province. To be specific, the task for all parties is to create a system that prepares all British Columbians through learning to excel, innovate, prosper and "win" in an increasingly competitive, dynamic global context.

**"Ready, Set, Go" – Key Emphases for Our Provincial Learning System**

| READY | SET | GO⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ | |
|---|---|---|---|
| • Early Childhood Development | • Foundation Skills and Knowledge | • Multiple Pathways to Graduation | • Expanded Post-Secondary System<br><br>• Enhanced R & D |
| 0 to Age 5 | K to Grade 10 | Grades 11 & 12 | Graduation & Beyond |
| • concentrate on providing best possible conditions for early learning: | • concentrate on performance assessment | • broaden criteria for graduation | • expand and diversify provincial capacity for post-secondary learning/training |
| ~ security<br>~ nurture<br>~ stimulation<br>~ encouragement | • emphasize reading, numeracy, science, fine arts, social responsibility | • vary time, settings, and programs | ~ pursue "seamless transitions" between secondary and post-secondary systems<br><br>~ improve and expand industry and apprenticeship training & credentialing |
| • emphasize early literacy, inquiry, creativity, physical activity | • emphasize parental involvement and responsibility for student learning | • increase the rate of graduation | ~ expand capacities of trades, technical, and vocational programs |
| • emphasize family/ parental involvement in early learning | | | ~ increase post-secondary completion rates<br><br>~ Increase commitment to graduate programs, particularly at the PhD level |
| | | | • expand the mandate and capacity for research and development through the university system |

In short, a continuous learning system must be envisioned and fostered within our province. Such a system should engage every British Columbian, from their time of birth through senior citizenship, in fulfilling the promise of their natural capacity for learning, growing, and innovating. Within this system there should be a continuum of learning opportunities with three main areas of concentration.

Each of these three areas of concentration represent critical stages of learning and development leading to the outcomes of a well educated, highly skilled, and effectively trained populace shaping and supporting the economy of this province. Clearly, we are working from a position of strength in our existing systems and institutions that are already active and performing well in each area. Our goal now is to link our systems and integrate the work of our respective institutions into a refined, expanded continuous learning system that effectively engages and prepares every citizen of the province for a productive and prosperous future.

In the opinion of the Panel, each area of concentration holds key emphases pertinent to the overall goal of forging a "learning to win" culture. These emphases are described and itemized in the box on the previous page.

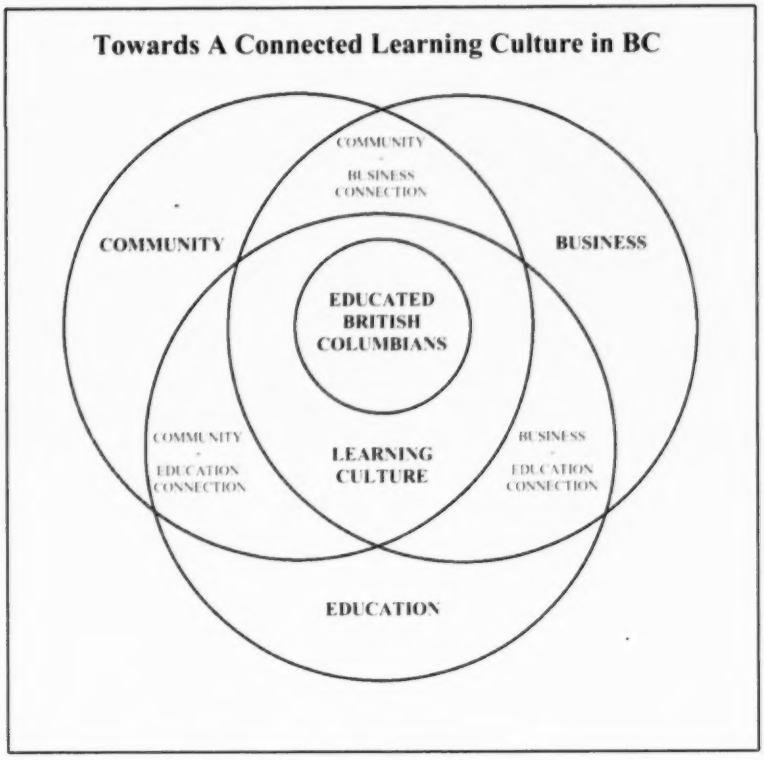
## V. Conclusions and Recommendations

At the direction of the BC Progress Board, the Expert Panel on Education, Skills, Training and Technology Transfer has addressed the mandate of identifying critical linkages between education, skills, training and technology transfer and the prospect for improved economic and social prosperity in British Columbia. In addressing this mandate, the Panel has worked from the premises that:

- Our prospects for prosperity, present and future, are directly linked to our society's basic, overall capacity for learning and innovation; and
- British Columbia must build upon its current education strengths and create a culture of ongoing learning in order to secure its economic and social future.

The Panel considered relevant "facts of life" in our province's current demographic, economic/employment and research/innovation contexts. It then considered existing strengths and issues characteristic of the province's systems and institutions for education, skills and training and research.

Taking this background into account, the Panel envisions fostering a highly integrated, coherent, yet diversified learning system that connects people with possibilities and opportunities in communities throughout BC toward building a culture of learning and innovation. Through such a refined, adaptive, and integrated system of learning and innovation, the Panel believes the nature and spirit of new economic opportunities and improved prosperity can be shaped and sustained.




The following recommendations lay the foundation for a system to "get ready, get set, and go forward" towards a brighter future.

***RECOMMENDATIONS***

***"Getting Ready": Birth to Kindergarten***

1. Require health and education agencies to make available to all new and prospective parents, the facts linking secure, nurturing, and stimulating home/family environments to strong brain development, high capacity for learning, and low incidence of behaviour disorder and incorporate within the educational curriculums for all high school students programs on parenting and early childhood development.

***"Getting Set": Kindergarten to Grade 10***

2. Develop a core emphasis on student performance assessment in kindergarten through grade 10, with a focus on expanded and refined knowledge of student assessment criteria and methodology; set targets for performance on international achievement tests (reading, math and science) approaching a score of 550.

3. Engage with Aboriginal communities in a culture of learning that encourages students to succeed in their educational goals and monitor year over year improvements in student performance on Foundation Skills Assessments and in relation to graduation rates.

***"Going Forward": Grades 11 and 12 and Post-Secondary***

4. Broaden and extend pathways to graduation and target an increase in the overall secondary program graduation rate at a minimum of 85% by 2010, and increase the rate of secondary program graduation for Aboriginal students to 60% or better by 2010.

5. Within the increase of the overall secondary program graduation rate, target increases in the number of students completing programs in apprenticeship, career/technical, and cooperative education by a minimum of 50% by 2010.

6. Expand the capacity of the post-secondary system to respond to a growing student population and demand:
   i. Extend the mandate of an existing provincial University to Kelowna;
   ii. The numbers of international students educated within our post-secondary system should be increased by 50% by 2010;
   iii. Consideration should be given to the potential benefits of rationalizing college administration, beginning with the Greater Vancouver area; and,
   iv. Increase the overall profile and capacity of skilled trades and technical training by reallocating existing research and capital infrastructure of BCIT to Kelowna and Prince George.

7. Sponsor a Learning Summit every two years focusing on the development of partnerships between industry, communities, and educational institutions to foster workforce education and life long learning experiences for all British Columbians.

***"Going Forward": Research and Innovation***

8. Replenish the BC Knowledge Development Fund sufficiently to ensure that BC attracts a minimum 15-20 % share of all federal research funding for British Columbia.

9. Increase the number of students completing graduate research degrees within our university system by 7.5% annually.

10. Set appropriate targets for technology transfer and the commercialization of technologies arising from university research, including the numbers of patents, licenses and spin-off companies that should be developed.

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## *APPENDIX A: EDUCATION, SKILLS, TRAINING AND TECHNOLOGY TRANSFER EXPERT PANEL MEMBERS*

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Mr. David Baxter, Executive Director, Urban Futures Institute

Ms. Mary Bruce, Senior Vice President – Human Resources, BC Gas Inc.

Mr. Alex A. Campbell, President, Thrifty Foods (BCPB Member)

Mr. Herman Driediger, CEO, Eze Rent-it Centre Ltd. (BCPB Member)

Dr. John Helliwell, Professor of Economics, University of British Columbia

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*BCPB EAG – BC Progress Board Economic Advisory Group

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Mr. Alex A. Campbell, President, Thrifty Foods

Mr. Pat Corbett, Owner/ President, The Hills Health Ranch

Mr. Herman Driediger, CEO, Eze Rent-it Centre Ltd.

Mr. Don Gould, Former President & Chief Operating Officer, The Pas Lumber Company Ltd. (Retired)

Dr. Norman Keevil, Chairman, Teck Cominco Limited

Mr. Derek Lee, President, Prospero Int'l Realty Inc.

Mr. Jim Pattison, Chair, President & CEO, The Jim Pattison Group

Mr. Michael Phelps, Chairman of Advisory Board, Duke Energy Gas Transmission - Canada

Dr. Martha Piper, President & Vice-Chancellor, University of British Columbia

Ms. Stephanie Sharp, President, Ferax Capital Corporation

Mr. Ken Shields, President & CEO, Raymond James Ltd.

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